

What is claimed is:

- 1    1.    A method for selecting a base station comprising:  
2            receiving transmissions from a plurality of base stations;  
3            deriving indications of received signal strength for each of the transmissions;  
4            deriving from the transmissions load information associated with each of the  
5            plurality of base stations; and  
6            selecting one of the plurality of base stations as a current base station based on the  
7            indications of received signal strength and the load information.
- 1    2.    The method of claim 1, wherein selecting the current base station further  
2            comprises deriving from the transmissions distance information associated with each of  
3            the plurality of base stations.
- 1    3.    The method of claim 2, wherein deriving distance information comprises  
2            computing distance based on a reference time of transmission indicated in each of the  
3            transmissions and a received time of each of the transmissions.
- 1    4.    The method of claim 2, wherein selecting the current base station comprises  
2            comparing the received strength information, the load information, and the distance  
3            information of the current base station with a set of one or more candidate base stations.
- 1    5.    The method of claim 2, further comprising:

2 eliminating a first candidate base station among a plurality of candidate base  
3 stations if the load information associated with the first candidate base station  
4 indicates the load of the first candidate base station exceeds a threshold.

1 6. The method of claim 2, wherein selecting the current base station comprises:  
2 ordering a set of candidate base stations in accordance with descending  
3 indications of received signal strength;  
4 eliminating a first candidate base station among the set of candidate base stations  
5 if the load information associated with the first candidate base station  
6 indicates the load of the first candidate base station exceeds a threshold;  
7 comparing load information between a likely selected base station and the  
8 remaining set of candidate base stations;  
9 comparing distance information between the likely selected base station and the  
10 remaining set of candidate base stations;  
11 if the load of and distance to the likely selected base station does not exceed the  
12 load of and distance to each of the remaining set of candidate base stations by  
13 a first threshold, selecting the likely selected base station; and  
14 if the load of and distance to the likely selected base station exceeds the load of  
15 and distance to alternative base station of the remaining set of candidate base  
16 stations by the first threshold, and a handover cost function ( $C_j$ ) associated  
17 with the alternative base station exceeds the handover cost function ( $C_i$ )  
18 associated with the likely selected base station by a second threshold, then  
19 selecting the alternative base station.

- 1 7. The method of claim 6, wherein the first threshold is equal to two (2).
- 1 8. The method of claim 6, wherein the second threshold is equal to 3 dB.
- 1 9. The method of claim 1, wherein deriving received signal strength information  
2 associated with transmission from each of the plurality of base stations comprises  
3 computing a cost function based on the received signal strength of base station pairs of  
4 the plurality of base stations and a hysteresis factor.
- 1 10. The method of claim 6, wherein the hysteresis factor is adaptively determined  
2 based on standard deviation of the received strength for each base station pair.
- 1 11. A machine-readable medium having stored thereon a set of machine-executable  
2 instructions that, when executed by a data-processing system, cause the system to  
3 perform a method for selecting a base station comprising:  
4 receiving transmissions from a plurality of base stations;  
5 deriving indications of received signal strength for each of the transmissions;  
6 deriving from the transmissions load information associated with each of the  
7 plurality of base stations; and  
8 selecting one of the plurality of base stations as a current base station based on the  
9 indications of received signal strength and the load information.
- 1 12. The machine-readable medium of claim 11, wherein selecting the current base  
2 station further comprises deriving from the transmissions distance information associated  
3 with each of the plurality of base stations.

1 13. The machine-readable medium of claim 12, wherein deriving distance  
2 information comprises computing distance based on a reference time of transmission  
3 indicated in each of the transmissions and a received time of each of the transmissions.

1 14. The machine-readable medium of claim 12, wherein selecting the current base  
2 station comprises comparing the received strength information, the load information, and  
3 the distance information of the current base station with a set of one or more candidate  
4 base stations.

1 15. The machine-readable medium of claim 12, wherein the method further  
2 comprises:  
3 eliminating a first candidate base station among a plurality of candidate base  
4 stations if the load information associated with the first candidate base station  
5 indicates the load of the first candidate base station exceeds a threshold.

1 16. The machine-readable medium of claim 12, wherein selecting the current base  
2 station comprises:  
3 ordering a set of candidate base stations in accordance with descending  
4 indications of received signal strength;  
5 eliminating a first candidate base station among the set of candidate base stations  
6 if the load information associated with the first candidate base station  
7 indicates the load of the first candidate base station exceeds a threshold;  
8 comparing load information between a likely selected base station and the  
9 remaining set of candidate base stations;

10 comparing distance information between the likely selected base station and the  
11 remaining set of candidate base stations;  
12 if the load of and distance to the likely selected base station does not exceed the  
13 load of and distance to each of the remaining set of candidate base stations by  
14 a first threshold, selecting the likely selected base station; and  
15 if the load of and distance to the likely selected base station exceeds the load of  
16 and distance to alternative base station of the remaining set of candidate base  
17 stations by the first threshold, and a handover cost function ( $C_j$ ) associated  
18 with the alternative base station exceeds the handover cost function ( $C_i$ )  
19 associated with the likely selected base station by a second threshold, then  
20 selecting the alternative base station.

1 17. The machine-readable medium of claim 16, wherein the first threshold is equal to  
2 two (2).

1 18. The machine-readable medium of claim 16, wherein the second threshold is equal  
2 to 3 dB.

1 19. The machine-readable medium of claim 11, wherein deriving received signal  
2 strength information associated with transmission from each of the plurality of base  
3 stations comprises computing a cost function based on the received signal strength of  
4 base station pairs of the plurality of base stations and a hysteresis factor.

1    20.    The machine-readable medium of claim 16, wherein the hysteresis factor is  
2    adaptively determined based on standard deviation of the received strength for each base  
3    station pair.